KEBIDUMEI @

Tachometer Hour Meter

Self Powered Digital Tach
Maintenance
Hour Meter

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Fig-1 Hour meter

THE ENGINE MONITOR is a self powered LCD Hour meter, Tachometer and Maintenance Meter. An internal lithium battery furnishes the power for the monitor.

A wire around the spark plug wire of the engine provides both a tachometer signal and indicator that the engine is running.

The maintenance meter is used to alert maintenance personnel that a time interval has expired and maintenance should be performed on the engine. See Fig-1/Fig-2 .

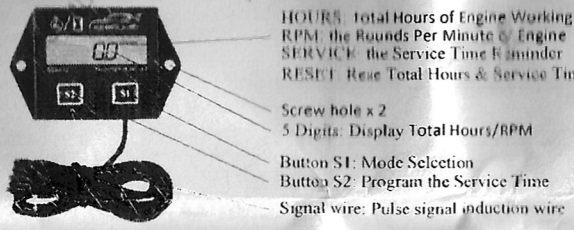

HOURS: Total Hours of Engine Working
RPM: the Rounds Per Minute of Engine
SERVICE: the Service Time Reminder
RESET: Reset Total Hours & Service Time
Screw hole x 2
5 Digits: Display Total Hours/RPM
Button S1: Mode Selection
Button S2: Program the Service Time
Signal wire: Pulse signal induction wire

Fig-2 Product

Product Installation

1. Signal wire installation

1.1 Signal wire connection

wrap the signal wire around the spark plug, wrap it 4-5 turns,and fasten it with a cable tie to ensure it is effectivelly fixed and will not loosen. See Fig-3/Fig-4/Fig-5 .

If the connection is not strong, the tachometer will get insufficient signal,then the RPM and Hour values will be inaccurate.

Normally if the rpm is a little low, you can increase the winding turns, if the rpm is a little high, you can reduce the winding turns.

For example,wrap 6-10 turns, if the rpm is a little high, you can reduce the winding turns.

For example, wrap 2-4 turns, if the rpm is a little low, you can increase the winding turns.

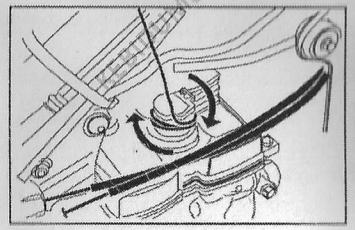


Fig-3 4 stroke installation, wrap pickup wire around head of coil.

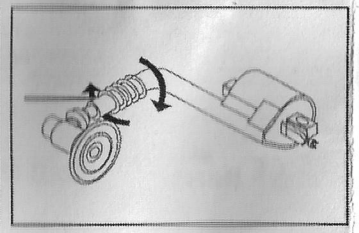


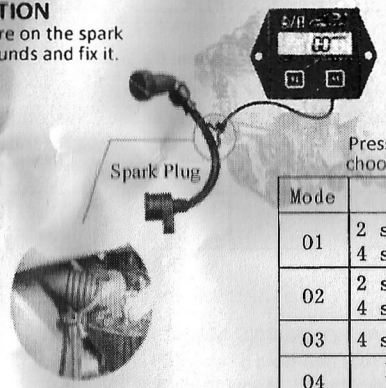
Fig-4 2 stroke installantion, wrap pickup wire around spark plug lead.

1.2 The test after the connection

start the engine, the LCD of the tach hour meter displayed the RPM and timing, which means the connection is correct.

If the rpm is inaccurate, please refer to clause 1.1 to adjust the tuns of the winding, or set the type of the engine (more information will be provided in the following instructions). See Fig-5 .

INSTALLATION
Wrap the wire on the spark Plug for 5 rounds and fix it.



Press and hod **S1** to choose stroke mode

Mode	Engine type
01	2 stroke 2 cylinder 4 stroke 4 cylinder
02	2 stroke 1 cylinder 4 stroke 2 cylinder
03	4 stroke 1 cylinder
04	RPM shut down, only display hours

Fig-5 Installation

⚠ CAUTION

(1) For traditional ignition modes,wrap signal wire 4 to 5 turns tightly around the engine spark plug wire.

(2) For"pencil coil"ignition,wrap signal wire around the plastic coil above the spark plug.

(3) The spark plug signal generated by different engine types has the difference of strength and weakness.

By adjusting the turns of winding , the appropriate adjustment can be made to improve the accuracy of the RPM and timing data.

This is a skill that different degree spark plug signal that allows the induction wire to acquire.

2. Screw Installation

M3.0 mm x 2
Hole Φ4.0 mm x 2

2.1 The design allows for surface mount.
2.2 Choose a location where the pick-up wire(included) will reach the meter to the spark plug.
2.3 Install with screws as Fig-6.

Fig-6 Surface mount

Note: Proper position requirement.

(1)no moisture, no grease, is a plane, no violent vibration and the temperature do not exceed 50℃(122F).

(2)Do not drill into gas tank, engine crankcase or oil reservoir frames.

⚠ CAUTION

(1)Before changing any settings of the **ENGINE MONITOR**, ensure that the engine is off.

(2) The product has certain waterproof function, but can not be used in deep water or soaked in rain for a long time.

Product Operation

1. Programmable firing patterns

1.1 Determined the amount of pluses (sparks) per engine revollution

This product provides 3 programmable firing pattens, which can be selected according to the corresponding rellationship as bellow. See Tab-1.

Mode	Engine type	Spark plug firing and engine rotate laps	Engine firing patterns
01	2 stroke 2 cylinder 4 stroke 4 cylinder	2 spark / 1 revolution	2P1R
02	2 stroke 1 cylinder 4 stroke 2 cylinder	1 spark / 1 revolution	1P1R
03	4 stroke 1 cylinder	1 spark / 2 revolution	1P2R

Tab-1 Mode-Engine type

Note: some 4 stroke 1 cyllinder engine is 1P1R, the setting is the same way as the 2 stroke 1 cylinder engine (mode 02).

⚠ CAUTION

If the obtained RPM is not accurate, for example, the RPM is half of the actual RPM, you can adjust it by programming the firing patterns.

1.2 Set The TACHOMETER (Spark plug ignition frequency - revolutions)

(1) Press and hold the S1 button for 4 seconds.
The LCD will display (See Fig-7)
01 -2P1R,spark plug fires twice per revolution
02 -1P1R,spark plug fires once per revolution **(Default Mode)**
03 -1P2R,spark plug fires once 2 revolutions
04 -hours only, will not display RPM
05 -reset total hours and maintenance time
(2) Once find your desired spark plug firing pattern, release S1 .
(3) The LCD blinks 3 times and return to total hours meter mode.
(4) The default for the standard mode is 02 (fires once per revolution).

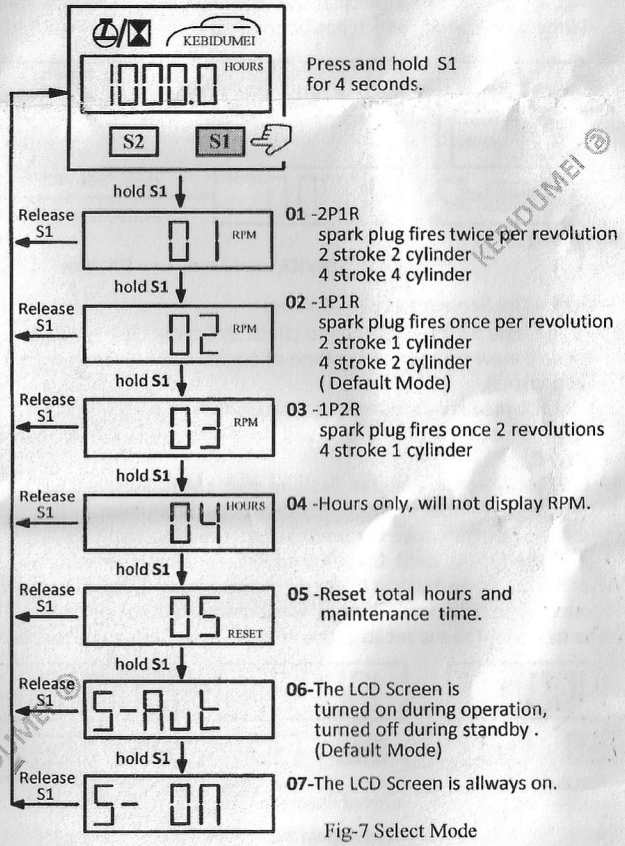


Fig-7 Select Mode

2. HOURS (TOTAL HOURS OF ENGINE WORKING)

(1)Total Hours are always displayed if engine is off.See Fig-8.
(2)Total hours can be manually reset.
(3)The "HOURS" value is 0 - 99999;
The timing accuracy is
0. **1H:** The "HOURS" is 0.0-9999.9H.
1H: The "HOURS" is 10000-99999H.
(4)The "HOURS" timing restarts from 0,
if the "HOURS" value exceeds 99999 hours .

Fig-8 Total HOURS

3. RPM (THE ROUNDS PER MINUTE OF ENGINE)

(1)If the tach hour meter detect the engine spark plug signal for more than 1s continuously, the LCD displays the current RPM of the engine.See Fig-9.
(2)The RPM will be refreshed every 1s.
(3)The RPM can be programmed for different pulses per revolution.
Different programming setting gets different RPM.
Please follow the instructions in section 1 to programming setting for accurate programming.

Fig-9 RPM

4. SERVICE (MAINTENANCE INTERVALL TIME / SVC TIME)

The interval time is a subtraction count. If the maintenance interval time is reduced to 0, the LCD displays "**SERVICE**".

4.1 Clear the "SERVICE"

If the current mode is not 05, press the **S1** and **S2** button simultaneously about 13s untill clear the icon "**SERVICE**". The new service interval time is activated, which has been programmed. See Fig-10.

Fig-10 Clear "**SERVICE**" and Active new SVC time

4.2 Program the Service Time (SVC Time)

(1) Press and hold S2 for 4 seconds to check SVC time. See Fig-11.1 .
Check and view the remaining time of engine maintenance within the first 4 seconds(4s).
The default maintenance interval time is 2000 hours.
(2) The right most digit on the LCD will flash and the SERVICE icon will be displayed.
(3) Press S1 once to increase the flashing digit by 1. See Fig-11.2 .
(4) If the desired number is entered, release the S1 button .
Press the S2 button once to increment to the next digit.
(5) Repeat step (3)-(4) until the desired SVC time is entered.
(6) After about 6s no button is pressed, the LCD display will return to total hours mode. The new SVC time was entered but not activated.
If the new SVC time is set to 0, the SERVICE icon will not be displayed.

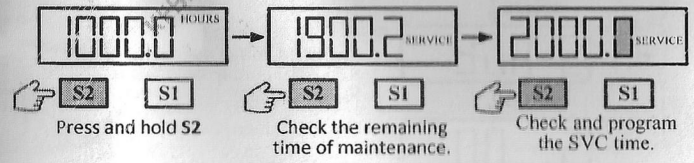


Fig-11.1 Program the Service Time

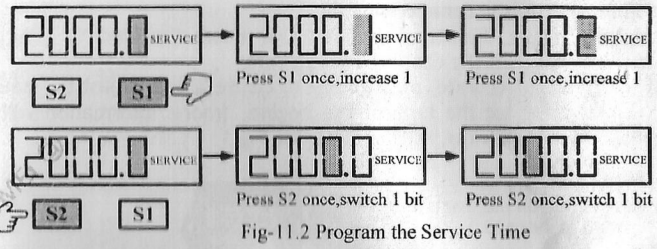


Fig-11.2 Program the Service Time

4.3 Activate the New Maintenance Interval Time (the SVC Time)

Press and hold S1 and S2 simultaneously about 13 seconds.
The two digits increase from 00 to 09 , then return to total hours mode. The new SVC time is activated and starts. See Fig-12.

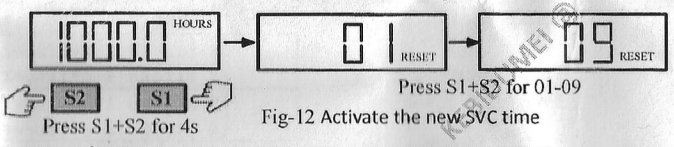


Fig-12 Activate the new SVC time

5. RESET (RESET TOTAL HOURS AND MAINTENANCE TIME)

(1) **Select mode 05**. Press and hold S1 until 05 is displayed, then release S1.
(2) The "RESET" is displayed. Keep Pressing S1 and S2 simultaneously about 13 seconds untill the meter perform a total reset. See Fig-13.

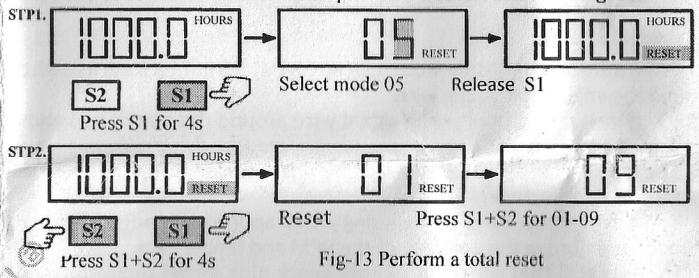


Fig-13 Perform a total reset

6. DISPLAY HOURS ONLY

(1) Select mode 04. Press and hold S1 until 04 is displayed, then release S1.
(2) If engine is running, show hours only and no RPM, the "HOURS" Icon blinks. See Fig-14.

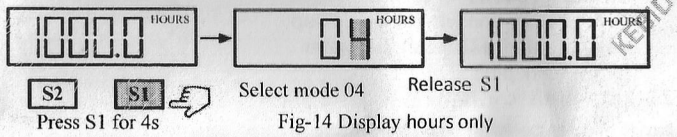


Fig-14 Display hours only

7. TURN OFF THE LCD SCREEN IN STANDBY MODE TO SAVE POWER

(1) In LCD mode **S-Aut** (default), if the RPM is detected or S1/S2 is pressed , the LCD screen is turned on and displays normally;
Normal operation is completed, the LCD keeps displaying for 5 minutes. Then the LCD is turned off to save electricity.
(2) Press and hold S1 until 06/07 is displayed, then release S1. See Fig-15.
S-Aut:06. The LCD Screen is turned on during operation, and turned off during standby **(Default Mode)**;
S- ON:07. The LCD Screen is always on;

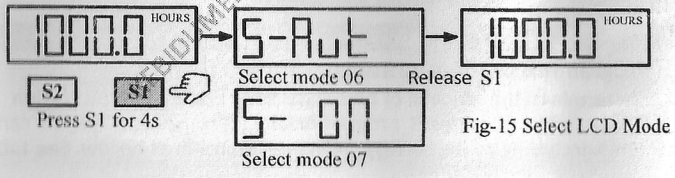


Fig-15 Select LCD Mode

8. Backlight Setting

3 backlight modes: (See Fig-16 .)
Automatical: **L-Aut** Always On: **L-ON** Always Off: **L-OFF**

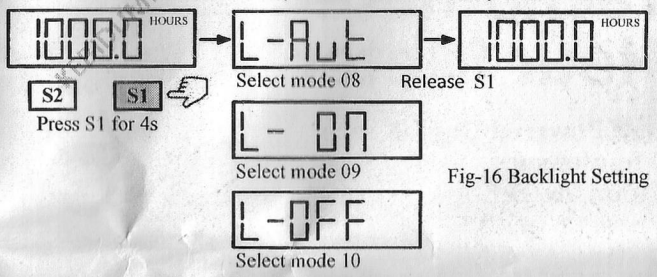


Fig-16 Backlight Setting

9. Battery installation and replacement

The battery type is CR2450, which is installed as follow. See Fig-17 .

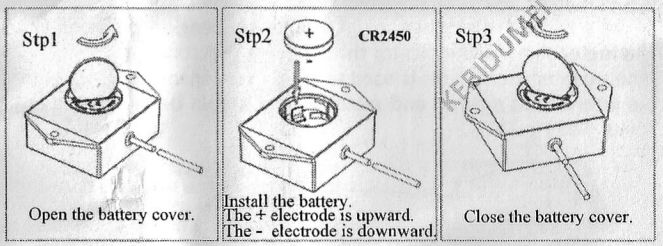


Fig-17 Battery Installation

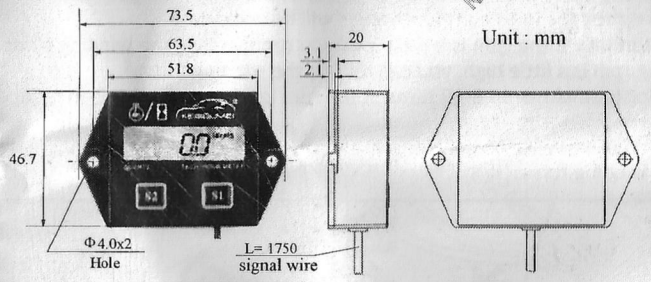
Specifications

Time range	0-99999H	Set SVC range	0.0-9999.9H/OFF
Time accuracy	0.1H/1H	Display mode	LCD
RPM range	0-20000RPM	Window size	41.5*11.5mm
RPM accuracy	30RPM	Product size	73.5*47.6*20mm
RPM refresh	1S	Battery type	CR2450 550mAh
Splash-proof	IP65	Firing Pattern	1P1R 2P1R 1P2R

Product Accessories List

Product x 1 User manual x 1

Dimension



CE RoHS RPM